

^{235}Am α decay (10.3 min) [2004As12,2004Sa05](#)

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, Jagdish K. Tuli, and Edgardo Browne		NDS 185, 560 (2022)	31-Aug-2022

Parent: ^{235}Am : $E=0$; $J^\pi=5/2^-$; $T_{1/2}=10.3$ min 6; $Q(\alpha)=6576$ 13; $\% \alpha$ decay=0.40 5

^{235}Am - $Q(\alpha)$: From [2021Wa16](#).

^{235}Am - $T_{1/2}$: From ^{235}Am Adopted Levels in the ENSDF database (Feb 2014 update); no new reference since then for ^{235}Am $T_{1/2}$ or J^π . Configuration= $\pi 5/2[523]$ ([2004As12](#)).

^{235}Am - $\% \alpha$ decay: $\% \alpha=0.40$ 5 for ^{235}Am α decay from Pu K x-ray and α particles measured simultaneously in a known geometry using calibrated detectors ([2004Sa05,2000SaZO](#)).

[2004As12, 2004Sa05](#) (also [2003Na10](#)): ^{235}Am isotope was produced in $^{233}\text{U}(^6\text{Li},4n)$ reaction at $E=34-42$ MeV. Reaction products were stopped in He gas loaded with PbI_2 clusters, and transported into an ion source of ISOL by gas-jet stream. Products were mass separated. Measured $E\alpha$, $I\alpha$, $\gamma\alpha$ coin with a Si PIN photodiode detector contained in a thin vacuum chamber with separate Be and Al windows. Positioned behind the Be window was a short coaxial Ge detector (ORTEC LOAX) to detect low-energy γ -rays, while an n-type Ge detector was placed behind the Al window which detected γ -rays from implanted nuclei through the Si wafer of the PIN detector.

Evaluator's note about the decay scheme: except for energy of one α transition, no other spectral information is available in literature.

 ^{231}Np Levels

E(level)	J^π	Comments
0	(5/2 ⁻)	E(level): this level is assigned as the ground state, although, the possibility of 6457α feeding a low-lying level cannot be ruled out. 2004As12 set an upper limit of 15 keV for this level energy based upon detection efficiency for low-energy γ -rays and internal conversion coefficient for a corresponding E1 γ -ray transition.

 α radiations

$E\alpha$	E(level)	HF [†]	Comments
6457 12	0	1.2	$E\alpha$: this α -transition feeds either the ground state or a low-lying state depopulated by γ transitions with E1 multipolarity and large internal conversion coefficients, as no γ -rays were observed in coincidence with the α particles.

[†] The nuclear radius parameter $r_0(^{231}\text{Np})=1.495$ 30, estimated by evaluators based on systematic trend of r_0 values for U and Pu in [2020Si16](#).